Listing of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-15. (canceled)

16. (Previously presented) A transducer for bioacoustic signals, comprising:

a transducer element having a front side and a rear side, the front side being adapted for establishing intimate contact with a surface of a body part receiving direct interior sound from the body, said transducer element being mounted in a housing subject to airborne noise, and having a surface surrounding the front side of said transducer element, said transducer element and said surrounding surface being in intimate contact with the surface of said body part during use,

wherein the transducer element has an effective area that is less than 50% of the area of the surrounding surface of the housing, and

wherein the rear side of the transducer element is loaded by acoustical network means which are in communication with the surrounding air, said loading creating an extinguishing relationship between airborne noise signals influencing the front and rear sides of the transducer element, respectively.

17. (Previously presented) A transducer according to claim 16, wherein the effective area of the transducer element fulfills the area ratio $0.50 \geq ad/ah \geq 0.001$, where *ad* is the effective area and *ah* is the area of the surrounding surface.

18. (Previously presented) A transducer according to claim 16, wherein the effective area of the transducer element fulfills the area ratio $0.20 \geq ad/ah \geq 0.05$, where *ad* is the effective area and *ah* is the area of the surrounding surface.

19. (Previously presented) A transducer according to claim 16, wherein the transducer element is a compound diaphragm which produces an electrical output when subjected to bending.

20. (Previously presented) A transducer according to claim 16, wherein the transducer element is a compound diaphragm which produces an electrical output when subjected to differential stretching of a front side with respect to a rear side of the diaphragm.

21. (Previously presented) A transducer according to claim 16, wherein the acoustical network means comprises a cavity in the housing which is indirectly influenced by airborne noise.

22. (Previously presented) A transducer according to claim 16, wherein the transducer element is a compound diaphragm and wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm.

23. (Previously presented) A transducer according to claim 16, wherein the acoustical network means comprises a cavity and at least one port in the housing.

24. (Previously presented) A transducer according to claim 23, wherein the port is formed by a narrow slit.

25. (Previously presented) A transducer according to claim 24, wherein the slit is made in a material that is not wetted by water.

26. (Previously presented) A transducer according to claim 16, wherein an elastic material capable of transmitting mechanical vibration is provided in sealing relationship with respect to the diaphragm in a manner sealing the diaphragm relative to the surface of a body part in use.

27. (Previously presented) A transducer according to claim 16, wherein the acoustical network means comprises a damping material.

28. (Previously presented) A transducer according to claim 27, wherein the transducer element is a compound diaphragm, wherein the acoustical network means comprises a cylindrical conduit having essentially the same diameter as the diaphragm and wherein the cylindrical conduit is provided with a damping material.

29. (Previously presented) A transducer according to claim 27, wherein the acoustical network means comprises a damping material, and wherein the damping material is used as a resistive element in a port.

30. (Previously presented) A transducer according to claim 27, wherein the damping material has water-repellent qualities.

31. (New) A transducer assembly for transducing bioacoustic signals, comprising:

a transducer element having a front side and a rear side;

a housing, the housing subject to ambient noise and comprising a surface surrounding the front side of the transducer element, the transducer element and the surrounding surface of the housing situated to establish intimate coupling with a surface of a body part during use, the body part surface defining a source of the bioacoustic signals; and

an ambient noise suppression arrangement comprising a selected area ratio of an effective area of the transducer element (*ad*) relative to an area of the surrounding surface of the housing (*ah*), wherein the effective area of the transducer element (*ad*) is less than 50% of the surrounding surface area (*ah*) and the selected area ratio provides for increased ambient noise suppression within a frequency range associated with the bioacoustic signals.

32. (New) The transducer assembly of claim 31, wherein the selected area ratio is defined by $0.50 \geq ad/ah \geq 0.001$.

33. (New) The transducer assembly of claim 31, wherein the selected area ratio is defined by $0.20 \geq ad/ah \geq 0.05$.

34. (New) The transducer assembly of claim 31, wherein the selected area ratio provides for an increased signal-to-noise ratio (SNR) defined by a ratio of bioacoustic signal strength relative to ambient noise strength, wherein the increased SNR is achieved by a decrease in the net ambient noise strength.

35. (New) The transducer assembly of claim 31, wherein the ambient noise suppression arrangement comprises an acoustical network through which ambient noise is communicated from air surrounding the housing to the rear side of the transducer element, the acoustical network configured to increase ambient noise suppression within the frequency range associated with the bioacoustic signals.

36. (New) The transducer assembly of claim 31, further comprising interfacing material disposed over at least the front side of the transducer element and configured to provide good acoustical coupling between the transducer element and the surface of the body part during use.

37. (New) A transducer assembly for transducing bioacoustic signals, comprising:

a skin coupling surface comprising a transducer element and having a front side and a rear side;

a housing, the housing subject to ambient airborne noise and comprising a surface surrounding the front side of the transducer element, the transducer element and the surrounding surface of the housing situated to establish intimate coupling with a surface of a body part during use, the body part surface defining a source of the bioacoustic signals; and

an ambient noise suppression arrangement configured to suppress ambient airborne noise coupled to the rear side of the skin coupling surface and ambient airborne noise coupled to the front side of the skin coupling surface, the ambient noise suppression arrangement configured to upwardly shift a transducer assembly resonance notch beyond an upper frequency limit of a frequency range associated with particular bioacoustic signals.

38. (New) The transducer assembly of claim 37, wherein the skin coupling surface comprises interfacing material disposed over at least the front side of the transducer element and configured to provide good acoustical coupling between the transducer element and the surface of the body part during use.

39. (New) The transducer assembly of claim 37, wherein the upper frequency limit is a frequency greater than 1000 Hz.

40. (New) The transducer assembly of claim 37, wherein the upper frequency limit is a frequency less than 1000 Hz.

41. (New) The transducer assembly of claim 37, wherein the particular bioacoustic signals are associated with body sounds selected from the group consisting of heart sounds and low frequency heart murmurs.

42. (New) The transducer assembly of claim 37, wherein the particular bioacoustic signals are associated with body sounds selected from the group consisting of lung sounds and high frequency heart murmurs.

43. (New) The transducer assembly of claim 37, wherein the ambient noise suppression arrangement comprises a selected area ratio of an effective area of the transducer element (*ad*) relative to an area of the surrounding surface of the housing (*ah*).

44. (New) The transducer assembly of claim 43, wherein the effective area of the transducer element (*ad*) is less than 50% of the surrounding surface area (*ah*) and the selected area ratio provides for increased ambient noise suppression within a frequency range associated with the particular bioacoustic signals.

45. (New) The transducer assembly of claim 37, wherein the ambient noise suppression arrangement comprises an acoustical network through which ambient noise is communicated

from air surrounding the housing to the rear side of the transducer element, the acoustical network configured to increase ambient noise suppression within the frequency range associated with the particular bioacoustic signals.

46. (New) A method of transducing bioacoustic signals, comprising:

providing a transducer assembly comprising a housing and a transducer element having a front side and a rear side, the housing comprising a surface surrounding the front side of the transducer element, the transducer element and the surrounding surface of the housing situated to establish intimate coupling with a surface of a body part during use, the body part surface defining a source of the bioacoustic signals;

communicating ambient noise through an opening in the housing and to the back side of the transducer element;

receiving ambient noise at the front side of the transducer element when the housing establishes intimate coupling with the body part surface during use; and

reducing ambient noise influencing the transducer element by upwardly shifting a transducer assembly resonance notch beyond an upper frequency limit of a frequency range associated with particular bioacoustic signals.

47. (New) The method of claim 46, wherein reducing ambient noise influencing the transducer element comprises providing a selected area ratio of an effective area of the transducer element (*ad*) relative to an area of the surrounding surface of the housing (*ah*), wherein the effective area of the transducer element (*ad*) is less than 50% of the surrounding surface area (*ah*).

48. (New) The method of claim 46, wherein communicating ambient noise through the housing opening comprises communicating the ambient noise through an acoustical network.

49. (New) The method of claim 46, wherein the upper frequency limit is a frequency greater than 1000 Hz.

50. (New) The method of claim 46, wherein the upper frequency limit is a frequency less than 1000 Hz.